Volume Title: The Youth Labor Market Problem: Its Nature, Causes, and Consequences

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14 The Minimum Wage and Job Turnover in Markets for Young Workers

Robert E. Hall

By the standard analysis, the minimum wage ought to create a shortage of jobs for young workers. The minimum sets a reward to work which draws the young into the labor market in numbers beyond the level of employment which employers are willing to provide. With large numbers of job-hunters looking for a small number of actual jobs, jobs become exceedingly hard to find, according to this view. The excessive effort required for young workers to find jobs in such a market is one of the important social costs of the minimum wage and is starkly evident in high unemployment rates for the young. This analysis exhibits one important discrepancy from the actual experiences of American youths: in fact, jobs paying the minimum wage are quite easy to find. Millions of jobs are filled every year by a never-ending stream of youths. The young take no longer than mature workers to find jobs, even though they are clearly differentially influenced by the minimum wage. It is by now firmly established that high unemployment among youths is associated with high *frequency* of unemployment, not long duration of unemployment. To put it another way, the problem of jobs for the young is not that they are hard to find, but that they do not last very long.

This chapter presents an alternative analysis of the effects of the minimum wage within a labor market where both job turnover and the availability of new jobs are determined through the interaction of the preferences of young workers, the costs of turnover and recruiting faced by employers, and the minimum wage set by the government. The essential hypothesis is that the arrangements observed in markets for the

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young are an adaptation that is as efficient as it can be in the face of the distortion imposed by the minimum wage. This chapter argues that the principal effect of the minimum wage is to increase job turnover rather than make it more difficult for the unemployed to find work. Through their recruiting and layoff policies, firms can push the market toward a point where the trade-off between turnover costs and job-finding benefits is efficient. This point involves roughly the same degree of job-finding effort no matter how far the minimum wage distorts the market, at least up to a certain level. The markets most seriously affected by the minimum wage will have the highest rate of turnover, but the participants in them will not think of them as markets where work is hard to find.

The analysis presented here should help to square the economic analysis of the effects of the minimum wage with the facts about the operation of modern labor markets for the young. It does not alter in any important way the criticisms emerging from the standard analysis about the economic inefficiency of the minimum wage. Excessive turnover caused by the minimum wage is a waste of resources. High unemployment brought about by the minimum wage is just as costly if it comes from high turnover as it is when the minimum creates difficulties in finding work.

14.1 Data on Turnover and Employment

Table 14.1 presents data from U.S. surveys comparing turnover and unemployment among teenagers and adults. These data strongly confirm that the important difference between the two groups is in their rates of job separation, not in their rates of job-finding. The first two lines measure two different aspects of the job-finding process; teenagers and adults are similar in both. The first line shows the proportion of job-changers who do not experience any unemployment between jobs. If jobs for teenagers were harder to find than jobs for adults, the proportion of job-changers without unemployment would be lower for teenagers, but, in fact, the proportions are slightly higher for teenagers (the survey upon which this finding is based is not tabulated by sex). The second line shows the percentage of the unemployed who take jobs each week. Again, if teenage markets were slacker, this percentage would be lower than that for adults, but in fact it is higher, especially among women. Note that the evidence from the first two lines of table 14.1 does not involve the mistake of trying to infer rates of job-finding from data on the duration of unemployment. As Marston (1976) and Clark and Summers (1979) have pointed out, much of the explanation of the brief duration of unemployment among teenagers comes from their high propensity to drop out of the labor force while unemployed. However, the correct comparison in terms of actual success in finding work shows that teenagers are on a par with adults.

Table 14.1 **Job-finding, Separation, and Unemployment Rates by Age and Sex, 1974**

	Male		Female	
	Teenage	Adult	Teenage	Adult
Proportion of job-changers with no unemployment (%)[a]	56.0	54.2	56.0	54.2
Weekly job-finding rate of the unemployed (%)[b]	6.0	5.7	5.3	3.9
Weekly separation rate (%)[c]	8.3	3.3	8.9	2.8
Actual unemployment rate (%)[d]	15.5	3.8	16.5	5.5

NOTES AND SOURCES: [a]Based on data from Bancroft and Garfinkle (1963), quoted in Clark and Summers (1979).

[b]Estimated by Clark and Summers (1979) from CPS gross flows data. This is the observed monthly transition rate from unemployment to employment, divided by 3.3.

[c]Estimated by Clark and Summers (1979) by multiplying the observed transition rate from employment to nonemployment by the fraction of job changes made without intervening nonemployment (line [1]).

[d]Source: *Employment and Training Report of the President.*

The third line of table 14.1 presents data on the weekly rate of departure from jobs among the four age-sex groups. Between 8 and 9% of teenagers lose or quit their jobs each week, compared to about 3% of adults. Teenage jobs are brief—they last about twelve weeks on the average. The dramatic difference in separation rates stands in sharp contrast to the virtual equality of job-finding rates. The well-known large gap in unemployment rates, shown in the fourth line of table 14.1, is due largely to the difference in job separation rates. Table 14.1 does not attempt a full description of the dynamic process by which workers move in and out of the labor force, which would be necessary to give a complete account of the differences in unemployment between teenagers and adults. For such an account, see Marston (1976) and Clark and Summers (1979).

Investigation of possible causes of high separation rates among young workers is the main purpose of this chapter. Obviously, there are important normal influences toward brief jobs, including the fact that a fraction of employment takes the form of summer jobs. But the impression remains that much turnover is pathological. Consequently, this chapter spends a good deal of effort investigating the possible role of the minimum wage in stimulating excessive job turnover.

14.2 Determination of Turnover, Job-finding Rates, and Unemployment in the Presence of a Minimum Wage

The analysis presented in this section is closely related to an earlier paper of mine (Hall 1979), modified suitably to take the minimum wage

into account. The discussion here is intended to stand on its own, however.

The first component of the model describes the mechanical operation of the recruiting and job-finding process. The unemployed are viewed simply as a group of people who have not yet found work, but are confident of finding work eventually. Each of the unemployed has the same chance of locating a job each week. All unemployment is "frictional"; nobody is permanently unemployable. The state of tightness or slackness of the market is described by a single variable, the job-finding rate, which I will call f. It is the weekly probability that an unemployed worker will find a job. Tighter markets have higher values of f and are preferred by workers. On the other hand, slacker markets with lower values of f are preferred by employers for the following reason: employers compete with each other for workers who are available. When an employer extends a job offer in a tighter market, it is less likely to be accepted because the worker may also receive an offer from another employer at the same time. In formal terms, this consideration is embodied in a recruiting cost function, $\rho(f)$, which gives the number of offers that need to be made, on the average, to hire one new worker. As f approaches one, $\rho(f)$ approaches infinity—guaranteed instantaneous job-finding would make recruiting prohibitively expensive. In very slack markets with f near zero, $\rho(f)$ will be only slightly more than one. In my earlier paper, I derived an exact form, $\rho(f) = -\log(1+f)/f$, for the recruiting cost function, based on some further simple assumptions.

The job-finding rate is one of two major dimensions of conditions in the labor market; it does not by itself determine the unemployment rate. A very slack market, in which it is nearly impossible to find work, could have a low unemployment rate because few workers came to it to search. Similarly, a tight market could have a high unemployment rate because there was a large continuing flow of newly unemployed workers into it. The latter is a good description of markets for youths in the modern U.S. economy. Thus the other dimension of labor market conditions is the separation rate—the weekly probability that an employed worker will become unemployed. In stochastic equilibrium, where the flow of workers into the pool of unemployment through job separations balances the flow out of the pool through finding new jobs, the unemployment rate will be

$$u = \frac{s}{s + f/(1-f)}$$

The job-finding rate, f, the separation rate, s, and the unemployment rate, u, are linked by this relation. Given the values of any two of these measures, the third is fully determined by it. In this chapter, the job-finding and separation rates are considered explicitly and the correspond-

ing unemployment rate is then derived. Of course, it is also true that unemployment is the difference between the supply of labor and the demand for it. Further discussion of determination of unemployment will continue after the principles of the efficient combination of separation and job-finding rates are presented.

It has already been established that both parties to the employment contract are concerned about the job-finding rate. Workers favor high rates and employers low rates. It is equally true that both parties are concerned about the separation rate. The rate is the reciprocal of the duration of employment: high separation rates mean jobs are brief. Both very long and very short jobs are generally undesirable from the employer's point of view. If an employer promises virtually permanent jobs to workers, it will be difficult to adjust total employment downward in the event of an adverse shift in demand. Permanent commitments also limit the employer's power to retain ony the most productive of a group of new recruits. For these reasons, it is costly for employers to promise lengthy employment. On the other hand, very high turnover implies excessive recruiting and training costs. This second consideration has dominated most discussions of the economics of turnover. In markets for young workers, though, rather high turnover rates may actually be efficient, expecially in lines of work where training costs can be made low. In these markets employers profit from the flexibility they enjoy in adjusting employment to each minor fluctuation in demand. The occasional redundancy of labor that is typical under more or less permanent employment arrangements is unnecessary where separation rates are high.

The hypothesis pursued here is that employment terms adjust to mediate the conflicting attitudes of employers and workers about job-finding and separation rates. Specifically, the two parties should equalize their trade-offs between the two aspects of the arrangement. The minimum wage does not impose any limitations on these dimensions of the employment package. In a market unaffected by the minimum wage, the parties ought to equalize their trade-offs between cash wages and the separation or job-finding rates. The fully efficient outcome is described in my earlier paper. The influence of an effective minimum wage in the present analysis is to prevent employers from offering better duration terms to workers in exchange for lower cash wages.

In analytical terms, the efficient combination of separation rates and job-finding rates occurs at the point of tangency of an indifference curve and an isocost curve. The indifference curve describes the alternative combinations of separation and job-finding rates that achieve the same level of satisfaction, on the average, for workers. Presumably, it slopes upward, since workers will need to be rewarded with higher job-finding rates in order to induce them to accept higher turnover. The isocost curve embodies the considerations about the costs and benefits to employers

mentioned earlier. Its slope is positive for low separation rates, where the added flexibility of higher turnover is a benefit, and then turns negative for high separation rates, where recruiting and training costs begin to dominate. All this can be summarized in figure 14.1.

The outcome of this analysis is an expansion path of alternative efficient combinations of separation rates and job-finding rates; call it $f = \theta(s)$. Different points on the path correspond to different levels of satisfaction achieved by workers and costs incurred by employers. If the market is operating at separation and job-finding rates that are not on this path, employers' costs can be reduced and workers' level of satisfaction improved by a suitable movement to a point on the path. Along the path, cost can be reduced only by making workers worse off by raising the separation rate.

The forces of supply and demand determine which of the efficient combinations of separation and job-finding rates will prevail in the market, and thus determine the unemployment rate. Since costs are sensitive to the separation and job-finding rates through recruiting and training costs, the total demand for labor in a market will be a function $L^D(w, s, f)$ of the hourly wage w, and the separation and job-finding rates s and f. Higher wages and higher job-finding rates depress the demand for labor, while higher separation rates stimulate it, at least over the range of

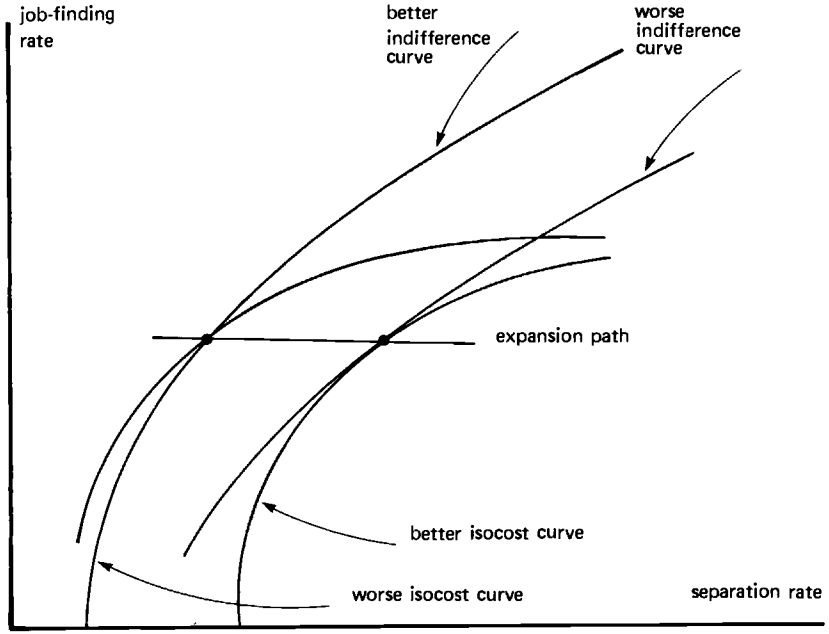

Fig. 14.1

variation that is considered here. Further implications of and justifications for the latter proposition are presented in the subsequent section of the paper.

The supply side of the market is a little more complex because the presence of unemployment even in equilibrium means that there are two different concepts of supply. The first, gross supply, corresponds to labor force participation—it consists of all the workers attracted to the market, including those looking for work who have not yet found it. Gross supply is a function $L^S(w, s, f)$ of the terms of employment offered by the market. The other concept is net supply, which does not count the unemployed. If u is the unemployment rate implied by the separation and job-finding rates, net supply is $(1 - u)L^S(w, s, f)$. Recall that u is a simple function of s and f, so that another way to express net supply is

$$\frac{f}{(1-f)s+f} L^S(w, s, f)$$

Equilibrium occurs in the market when demand and net supply are in balance:

$$L^D(w, s, f) = \frac{f}{(1-f)s+f} L^S(w, s, f)$$

The equilibrium that concerns this chapter is the constrained one that occurs when the government sets the wage through an effective minimum wage at level $\bar{w}$. The wage itself cannot participate in the process of clearing the market, but variations in the separation and job-finding rates can bring about a constrained equilibrium in the market. I will assume that they move in tandem, so as to preserve the efficient combination of the two rates; that is, the job-finding rate is $\theta(s)$ and not a free variable. This condenses the market-clearing process to a single dimension, the separation rate:

$$L^D[\bar{w}, s, \theta(s)] = \frac{\theta(s)}{[1-\theta(s)]s+\theta(s)} L^S[\bar{w}, s, \theta(s)]$$

This can be portrayed in the somewhat unconventional supply-and-demand diagram in figure 14.2.

The demand curve is shown as nearly vertical on the assumption that the benefits to the employer of higher turnover and the associated change in recruiting costs are not very large. On the other hand, gross labor supply may be reasonably sensitive to the separation rate—given the fixed wage rate, young workers will choose activities other than work in preference to the high unemployment rates that accompany high turnover rates. This is even more pronounced when supply is measured net of unemployment. Higher separation rates mean fewer workers are avail-

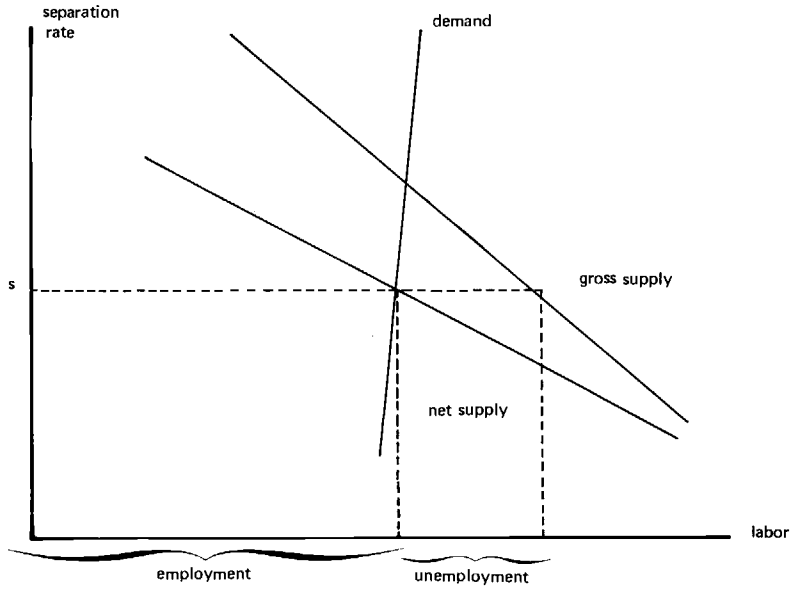

Fig. 14.2

able for work at any one time, both because the work is less attractive and because more of their time is spent finding new work.

When the wage is held fixed by minimum wage legislation, the separation rate assumes the role of clearing the market. Equality of supply and demand is achieved subject to the constraint of the minimum wage; in this sense, the market is in equilibrium. It is important to note, however, that this equilibrium is not efficient. Because the minimum wage does not try to peg either the separation rate or the job-finding rate, private economic arrangements yield an efficient trade-off between the two. However, the minimum wage does interfere with the trade-off between the separation rate and the cash wage rate. Separation rates (and therefore unemployment rates) are excessive under the minimum wage because employers are prohibited from offering a set of employment terms with lower wages and longer jobs, even though those terms would make workers better off and reduce employers' costs at the same time.

In a labor market unaffected by the minimum wage, the separation and job-finding rates are largely unaffected by shifts in supply or demand. Unemployment remains at a fixed "natural" rate when, say, demand increases. The wage rises to clear the market. This analysis of a free labor market is amplified in my earlier paper. In the presence of a minimum wage, the impact of an increase in demand is rather different. Because

the wage cannot respond, the separation rate falls as demand rises, as shown in figure 14.3. The increase in employment, from E to E', is somewhat less than the amount of the rightward shift of the demand curve (just as it would be if the wage were permitted to rise). Unemployment, which is held above the natural rate by the minimum wage, falls toward the natural rate.

The same apparatus will help to explain the effect of an increase in the minimum wage itself. For a given separation rate, a higher minimum wage means lower labor demand and higher net supply, so the demand schedule shifts to the left and the net supply schedule to the right (figure 14.4). The combination brings about a decrease in employment from E to E' and an increase in the separation rate from s to s'. Unemployment rises as well, as the figure 14.5 shows.

In the traditional analysis of the minimum wage, employment falls by the full amount of the downward shift in labor demand brought about by a higher minimum. Demand alone determines employment. The gap between supply and demand appears as unemployment. In the analysis presented here, the equilibrating role of the separation rate dampens the adverse effect of the minimum wage on employment. The rise in separations makes the labor market more attractive to employers and so helps to offset the disincentive of higher cash wages. A stricter minimum wage

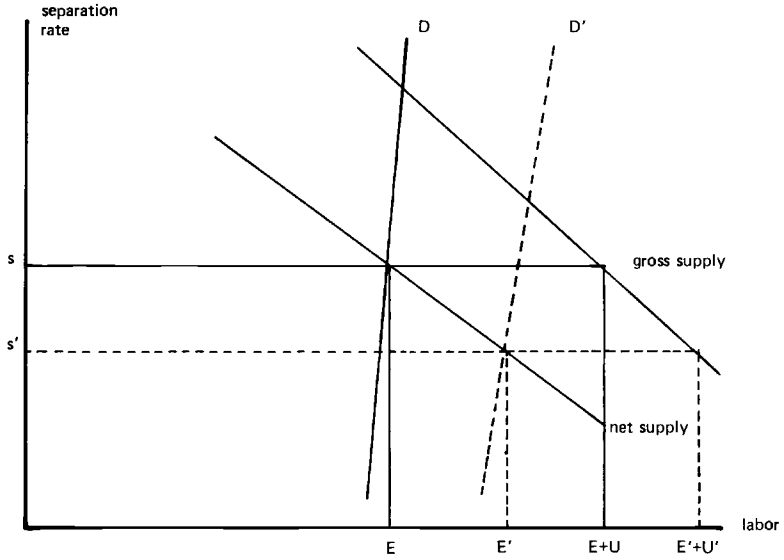

Fig. 14.3

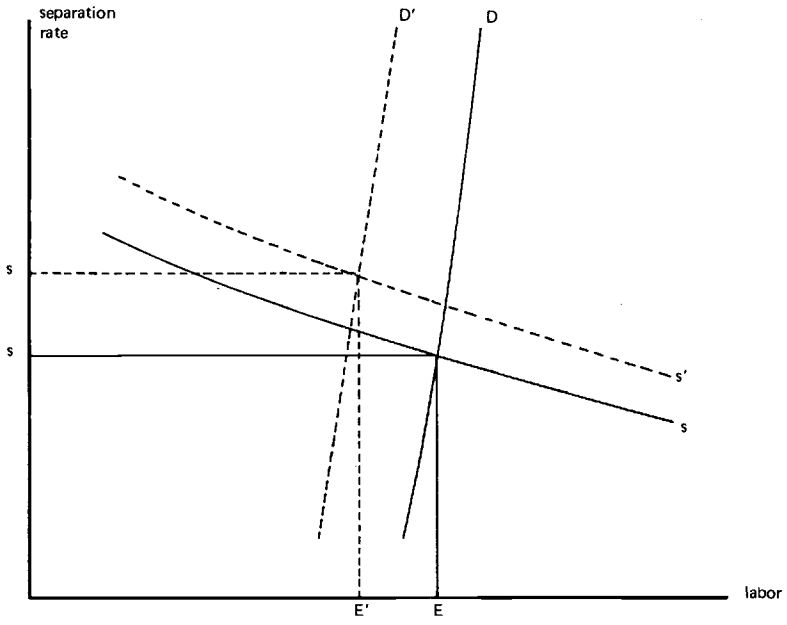

Fig. 14.4

must raise unemployment, however. Most, or perhaps all, of the increase comes from higher turnover rather than from lower job-finding rates and longer duration of unemployment.

This conclusion is rather different from one reached by Finis Welch (1976). In a brief discussion of the theory of the effect of the minimum wage on unemployment, he concludes that it is ambiguous because the shortage of jobs will decrease turnover among those lucky enough to find work. Implicit in Welch's discussion is the belief that jobs terminate at the initiative of workers, and that employers would prefer lower turnover. This situation would represent a failure of the market to achieve an efficient turnover rate where workers and employers have equalized their trade-offs between turnover and other aspects of the employment bargain. Under the hypothesis of an efficient trade-off, pursued here, it seems likely that turnover and unemployment are stimulated by a minimum wage.

Another discussion of the effect of the minimum wage on unemployment appears in Mincer (1976). In his analysis, the job turnover rate is taken as constant, unaffected by the minimum wage. He does consider the influence of unemployment on labor supply.

14.3 Turnover and Labor Costs

All of the novelty in section 14.2 rests on the hypothesis that employers can operate at lower costs when turnover rates are higher, given a fixed hourly cash wage. To see this, consider the opposite case where turnover above a certain critical level is undesirable from the point of view of the employer. Since turnover is assumed always to be undesirable to the worker, efficient arrangements will never involve a separation rate above the critical level. In this case, the efficient job-finding rate, $f = \theta(s)$, will rise rapidly as the separation rate approaches the critical level (say, s^*), as shown in figure 14.6.

The supply-and-demand diagram under a wage fixed by minimum wage legislation is shown in this case in figure 14.7. Here the net supply curve bends far to the left of the gross supply curve because the job-finding rate drops rapidly as the separation rate approaches s^*. If market equilibrium occurs at a separation rate near s^*, it will involve high rates of unemployment in the traditional sense of a stagnant market: the unemployed will consist of people who are having a great deal of trouble

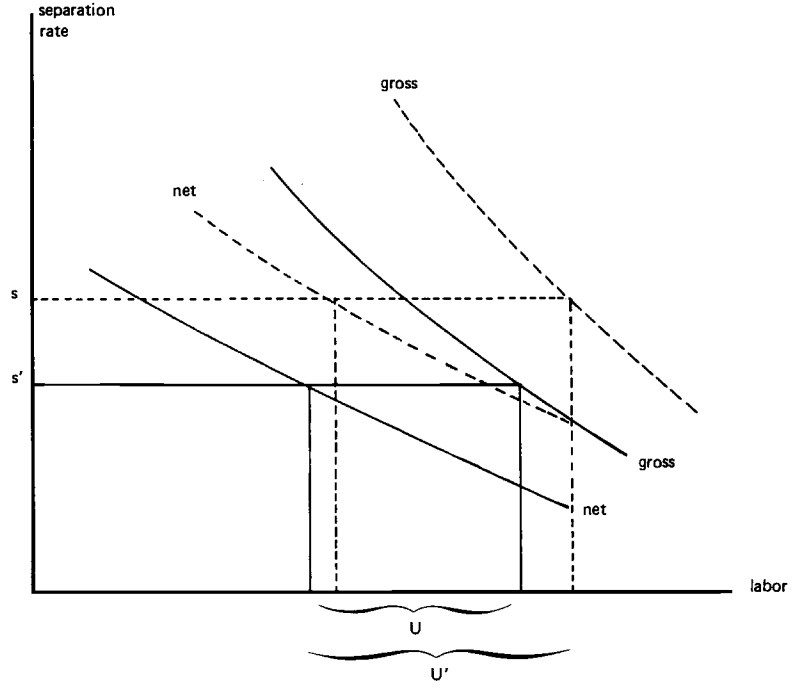

Fig. 14.5

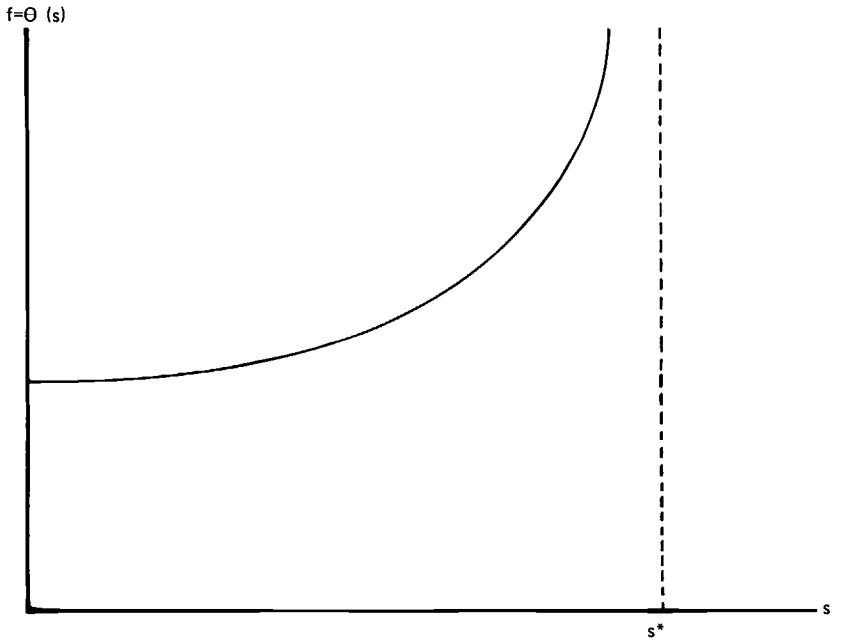

Fig. 14.6

finding jobs. The jobs they find eventually will last a reasonable length of time. This is the kind of influence of the minimum wage depicted in the standard analysis. To the extent that the minimum wage raises the wage above its full market-clearing level, it creates a shortage of jobs, and jobs are rationed among job-seekers by the increased difficulty in finding work.

My point here is the theoretical and practical possibility that a minimum wage operates in the opposite way, to stimulate job turnover rather than to depress job-finding. The most convincing part of the case favoring this hypothesis is the evidence presented earlier of very high job separation rates and rapid flows of workers into jobs in markets influenced by the minimum wage. This section gives some further reasons to think that the minimum wage exerts most of its effect in raising job turnover.

First, it may be useful to exhibit a class of utility functions and cost functions where the efficient job-finding rate is literally constant, independent of the minimum wage, and, indeed, independent of the supply and demand for labor generally. Within this class, workers' concerns about separation rates and job-finding operate through the unemployment rate. In other words, a worker is indifferent between two labor markets where wages and unemployment are the same, but one has higher separation and higher job-finding rates than the other. It is also

necessary to say something about workers' willingness to trade off cash earnings against unemployment, which will depend on the level of public unemployment insurance and workers' attitudes about the value of time spent out of work. A reasonable approximation is that there is a constant, λ, equal to zero for workers who are indifferent between work and unemployment (either because of full unemployment insurance or high value of time in nonworking activities) and equal to one for workers for whom unemployment is a pure waste of time and who receive no unemployment insurance. Then a utility function capturing all of this is

$$w(1 - \lambda u)$$

or, in terms of separation and job-finding rates,

$$w\left[1 - \lambda \frac{s}{s + f/(1-f)}\right]$$

The indifference curve along which workers achieve a certain level of satisfaction (say, y), can be written

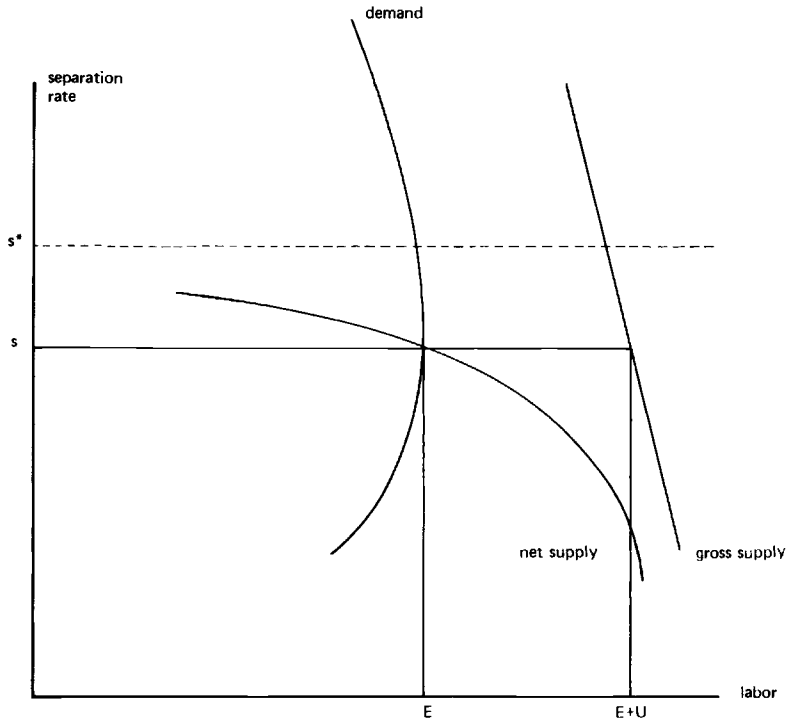

Fig. 14.7

$$s = \frac{f}{1-f}\,\frac{w-y}{y-(1-\lambda)}$$

On the cost side, it seems reasonable to approximate total cost as the sum of (1) costs not related to the type of labor under consideration, say, A; (2) regular hourly employment costs, say, aw; (3) recruiting costs, proportional to the rate at which jobs are filled, s, the effort required to fill one job, $\rho(f)$, and the hourly wage, w less (4) the benefit, say, bws, of the flexibility associated with the separation rate, net of training costs. The resulting cost function has the form

$$C(w, s, f) = A + Bw[a + \rho(f)s - bs]$$

It is only a useful approximation over the range of separation rates where it is plausible that rising rates convey benefits to the firm, on net.

An efficient employment arrangement that yields a level of statisfaction y to each worker can be described mathematically as the minimum of cost subject to the constraint that utility equal y:

$$\underset{s,f}{\text{Min}}\ A + Bw[a + \rho(f)s - bs]$$

$$\text{subject to } s = \frac{f}{1-f}\,\frac{w-y}{y-(1-\lambda)w}$$

The minimum wage prevents achievement of the fully efficient arrangement, where the minimum would be taken over the wage rate as well. Now the constraint can be substituted into the minimand to restate the problem as

$$\underset{f}{\text{Min}}\ A + Bw\left[a - [b - \rho(f)]\,\frac{f}{1-f}\,\frac{w-y}{y-(1-\lambda)w}\right]$$

But minimization of this over the job-finding rate, f, is equivalent to maximizing the expression

$$[b - \rho(f)]\,\frac{f}{1-f}$$

The maximum occurs somewhere between $f = 0$ and the critical job-finding rate, f^*, where the recruiting costs, $\rho(f)$, begin to outweigh the net benefits of turnover, b (figure 14.8). The important point is that the efficient job-finding rate is determined by the narrow consideration of balancing the employer's benefits from turnover against the worker's costs. Both are proportional to the hourly wage, so *the efficient job-finding rate is independent of the level at which the government sets the minimum wage*. It is also independent of the level of satisfaction achieved by workers and so independent of the supply of and demand for labor.

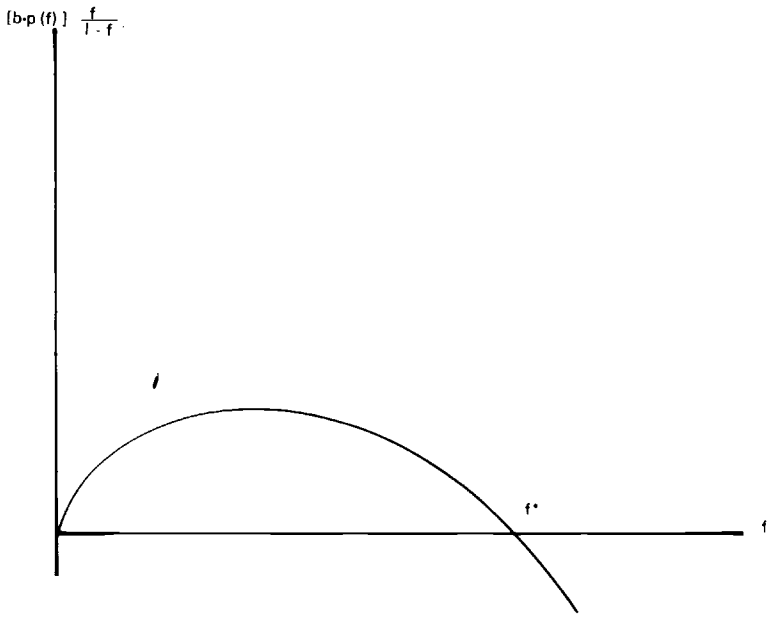

Fig. 14.8

It seems reasonable to expect that the efficient job-finding rate is fairly close to constant over a range of market conditions, even if the exact mathematical conditions set forth above do not hold. Obviously, the range includes only those separation rates where turnover has net benefits to employers. A sufficiently aggressive minimum wage will inevitably push the market close to the point where turnover becomes costly to employers, and the conventional analysis where the minimum creates a shortage of jobs will begin to apply. On the other hand, the effect of a minimum wage that pushes the cash wage only moderately above its equilibrium may well be to stimulate turnover rather than to depress job-finding.

The core of the argument that turnover can benefit employers, as I have emphasized earlier, is the flexibility that brief job commitments provide to employers. At the most basic level, the minimum wage induces turnover by inhibiting employers from holding overhead labor. Instead of paying a lower wage to long-term workers through thick or thin, employers subject to a minimum wage pay a high hourly wage to short-term workers who must finance themselves (at least partly) in times of slack. Only a tiny fraction of the fluctuations in demand that lie behind this process are aggregate—most affect just the firm itself. They are not necessarily purely random, either. A high-turnover employment policy

makes it easier to accommodate seasonal swings in demand as well, for example.

Other adaptations to the minimum wage are more subtle and probably take longer to respond to changes in the minimum. The scope for taking advantage of a high-wage, high-turnover employment policy depends on the technical organization of work within a firm. Training costs must be low in order to benefit from high turnover. Jobs must be highly standardized. The fast-food industry, which is a major source of employment at the minimum wage, is the leading example of this kind of adaptation. Workers can be trained in a few hours. They need not even memorize the prices of items on the menu because each item has a separate button on the cash register. Job turnover is a way of life in this industry, and the industry has learned to profit from it. Though obviously many forces have contributed to the evolution of the high-turnover practices of the fast-food industry, my suggestion here is that the minimum wage is important among them.

14.4 Achievement of the Efficient Job-finding and Separation Rates within the Labor Market

The analysis in this chapter pictures employers and workers agreeing on three aspects of the employment arrangement: the cash hourly wage, the separation rate, and the job-finding rate. Only the first of these is considered in the conventional analysis of employment bargains. Is it meaningful to speak of an agreement about separation or job-finding rates?

Job separation is under the joint control of the two parties to an employment arrangement. Separations can occur unilaterally as quitting or layoffs. Alternatively, they may occur by prearrangement, as when a summer or other temporary job comes to an end. Evidence from the United States suggests that the latter case is particularly important for teenagers (Hall 1978). In cases where there is no advance agreement about the duration of the job, there are generally understandings about how the job will come to an end. It is fairly easy for workers to find out the past layoff rates of employers and reasonable to assume that these are guides to the future. Similarly, employers can inquire about the employment histories of potential workers to avoid those who have deviated from the norm for the market. Though neither party gives up the right to bring about a separation unilaterally in any one instance, both face penalties for systematic departures from the prevailing employment terms.

Agreement about job-finding rates is a harder issue. A very general argument can be made that a market operating at an inefficient job-finding rate will be displaced by one operating at the efficient rate. In the

second market, everyone can be made better off than in the first. But this leaves the important question unanswered about how the market determines its job-finding rate. This point is discussed in my earlier paper. A market operating away from the efficient job-finding rate presents arbitrage opportunities for an intrepreneur willing to offer employment at alternative, efficient terms and to sell his workers' services to employers. Temporary employment firms could have exactly this function in clerical and other markets, though, of course, there are many other reasons for their existence as well. Alternatively, a market with an inefficient, high job-finding rate offers arbitrage profits to an employer who makes special efforts to advertise that jobs are readily available, but on terms favorable to the employer. As in the case of conventional supply-and-demand theory, the model presented here does not provide a fully worked-out story of how the market moves toward its equilibrium, but restricts its attention to the equilibrium itself.

While this discussion may lend some plausibility to the notion that the market does move eventually to the efficient equilibrium, it seems unlikely that the process is a speedy one. In particular, the prediction that the effect of a higher minimum wage is to stimulate turnover rather than to make jobs harder to find is a prediction for the long run. In the short run, the minimum wage seems likely to push the market into disequilibrium with an inefficiently low job-finding rate. The resulting lags are a potential complication in any empirical analysis of the effect of the minimum wage.

14.5 Conclusion

Jobs for young workers are readily available in the U.S. economy, in spite of minimum wage legislation that affects youths much more than any other segment of the labor force. Young workers find jobs just as fast as their older counterparts. The conventional analysis of the potential effects of a minimum wage suggests that it creates a shortage of jobs and so should make it more difficult for any one worker to find a job. Taken together, these constitute an apparent case against any important effect of the minimum wage. It seems that high unemployment rates of youths have to be blamed on something else.

This chapter has shown that a minimum wage can bring about high unemployment without causing a shortage of jobs or reducing the job-finding rate. Rather, in the long run, an effective minimum wage can induce the evolution of employment practices and arrangements that raise turnover. The minimum wage does not block the market from achieving an efficient degree of tightness, that is, an efficienctly high job-finding rate. In fact, under reasonable assumptions about turnover and recruiting costs, the efficient job-finding rate is a constant, unaffected

by the minimum wage or the supply of and demand for labor. The adverse effects of the minimum wage are then concentrated in inefficiently high separation rates. The shockingly low average duration of jobs held by teenagers—less than three months—may be an important consequence of the minimum wage. If so, high unemployment among youths can be traced in part to the minimum wage, which makes them become unemployed too often even though it does not inhibit job-finding once they are unemployed.

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Comment Christopher A. Sims

This chapter brings to bear on the youth unemployment problem a modern, abstractly interesting, theoretical apparatus. The operational implications of the analysis have not been pushed very far. The main one appears to be a refutation of the claim that, because job-finding rates for teenagers are not low relative to adult rates, the minimum wage must not be an important explanation for high youth unemployment rates. Hall is surely right that some of the impact of the minimum wage should be expected to show up in separation rates, as firms adapt and new firms enter exploiting the potential productivity gains from high unemployment (hence high employee-finding rates) and high separation rates.

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As the chapter makes clear, the relative importance of effects of the minimum on job-finding and on separation rates depends on the shapes of indifference curves and iso-cost functions about which there is essentially no information. If one presumed that in the absence of a minimum teenagers would have job-finding rates similar to adults and also that the minimum wage is a major explanatory factor for youth unemployment, then the facts that youth unemployment rates are high and job-finding rates for youths are not very different from adult rates would justify a conclusion that the minimum affects unemployment rates mainly through separation rates. Of course, in fact, it is quite plausible that youth job-finding rates would be much higher than adult job-finding rates in the absence of a minimum wage, so the question must remain open.

But the importance of this chapter lies less in its direct implications than in the promise of its style of analysis. The paper invokes the notion that labor market transactions involve implicit commitments about job duration on the part of both employers and employees. Hall follows most of the literature in this area in proceeding as if such implicit contracts work efficiently, but I think that in doing so he misses the main potential contribution of this kind of analysis to explaining the special character of youth job markets.

The labor market as a whole is rife with familiar externalities, most of which are regularly ignored in sophisticated theoretical work on equilibrium under uncertainty. Ignoring them may be justified for practical purposes as a first approximation, especially in developing aggregate conclusions. But some of the most important distinguishing features of the youth labor market are precisely that many of these externalities occur in magnified form there. Explicit long-term labor contracts are difficult to enforce legally, and raise moral hazard problems as well. Implicit contract theorists rely, as does Hall here, on the notion of "reputation" to enforce adherence to implicit contracts about duration. But youths who are taking their first few jobs have no reputation to guide their potential employers; furthermore, individual separations have very large impacts on their work histories. An employer who hires an inexperienced teenager and keeps him on twice the usual job tenure because he is reliable (or fires him quickly because he is unreliable) is performing a screening service for other employers for which he is not compensated. Job-finding rates matter to workers, and hiring rates matter to employers, but a worker's own employer's hiring rate (unlike the employer's separation rate) does not matter much to a worker. For older workers this externality is circumvented to some extent by seniority systems for layoffs and rehiring and by "internal labor markets." But these mechanisms are obviously much less important for youth labor markets.

An implicit contract theory framework which took account of these sources of externalities could be a valuable guide to empirical work with

policy implications. As it is, casual meditation on the list of externalities in the preceding paragraph suggests the plausibility of a picture of the youth labor market very different from that Hall presents. One would think that in an unregulated market youths would place a socially inefficient premium on job stability (for fear that short tenure jobs, regardless of the reason for termination, would make their work history look unusually unstable). In addition, firms, having no way to get credit through the market for the contribution their hiring rates make to the job-finding rate, might put an inefficient premium on stability. A moderate minimum wage, by pushing the market in the direction of greater average turnover rates, may then make typical youths better off. Of course, as Summers and Clark emphasize in this volume (chapter 7), youths have diverse labor market experiences, and those who have low productivity may be made worse off by the minimum; this negative effect could operate mainly by decreasing the job-finding rate of the less productive group while preserving a high job-finding rate for the more productive majority and leaving an aggregate picture of a high job-finding rate.

This picture of the youth labor market and the minimum wage is put forth not as a firm conclusion, but as an indication of the range of reasonable views which remain consistent with a modern theoretical approach to the subject. Until more detailed theory is developed in tighter connection to empirical facts, Hall's picture of a youth labor market characterized by inefficiently high unemployment due to inefficiently high separation rates due in turn to the minimum wage remains in the category of stimulating speculation.

Comment Martin Neil Baily

Robert Hall has written an informative and elegant paper. Good theory is often uncomplicated; it focuses on the key relationships. The story comes through without a mess of algebra. Hall is following Mincer and others in incorporating turnover as an integral part of the analysis. This is the right way to go.

Trying to understand the nature of unemployment is like trying to put handcuffs on an octopus. You think you have it tied down and then another pair of tentacles get you round the throat. Hall presents a specific picture of teenage unemployment and it may very well be the correct one, but it is not the only one. Hall asserts that teenagers can find jobs easily, but that the minimum wage results in very short job tenure and excessive unemployment.

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There are, however, alternative scenarios consistent with observation. First, if the jobs open to teenagers do not match their job aspirations they may drift from job to job and in and out of the labor force of their own volition. Reducing the minimum wage would only reduce unemployment if it encouraged more low-wage but nevertheless attractive positions (like apprenticeships). It could have no impact at all.

Second, are jobs really easy to find? The evidence given for this view is that the average duration of unemployment spells is short and that the job-finding rate is similar for young persons and adults. The trouble is that words like "hard" and "easy" are not well defined. Consider a professional in his or her late thirties looking for a job. The job will be a major source of satisfaction or frustration and will probably be held for several years or perhaps for the remainder of the working life. Three months, six months, even longer is an appropriate time to spend searching or waiting for the right job to open up. On the other hand, consider the position of teenagers. Males 16 to 19 in 1974 spent nearly five months unemployed on average and then spent less than three months employed (see Clark and Summers, "Labor Market Dynamics and Unemployment," tables 4 and 8). Such a long wait for such a short job cannot possibly reflect productive search. Relative to the length of time they are held, jobs for teenagers appear hard to find. This point is important if one is predicting how a properly functioning youth labor market would work. It could be that young people want jobs that last only for short periods, either because of schooling or simply to sample several possible careers before settling down. If so, then an optimal pattern of unemployment would show teens with shorter spells of employment and very much shorter spells of unemployment than adults.

Third, since the incidence of unemployment is very unevenly distributed, the *average* rate of job finding or length of unemployment spell may not be relevant. Most of the unemployment problem and indeed most of the impact of the minimum wage may come from the minority of teenagers that have very great difficulty finding jobs.

However, while Hall's scenario is not obviously correct, it is not obviously incorrect either, so let me take it as given and consider his model on its own terms. The central variables in the analysis are the job-finding rate f and the separation rate s. The discussion of the separation rate was a little confusing because it failed to distinguish between separations initiated or desired by a firm and those initiated by a worker. With due allowance for recruiting and training costs, firms will welcome quittings and initiate layoffs when the wage exceeds the value of the marginal product. The freedom to make layoffs is valued by firms. But during periods of high product demand, separations are unwelcome and firms will discourage them. Although the available data on quittings and layoffs do not provide perfect proxies for the two cases, the way these

series move against each other over the cycle does suggest the importance of the distinction. I would have preferred "layoff rate" to "separation rate" as a description of the key parameter s in the model.

My second misgiving concerns the ability of an unregulated labor market for teenagers to achieve the efficient solution described by Hall. In my own work on contract theory and temporary layoff models I assumed that everyone knew the true probability distributions. Firms with very variable employment patterns would have to compensate their workers fully for the resulting high probability of layoff. This assumption was made apologetically, but nowadays rational expectations are assumed routinely. I would echo Christopher Sim's view that in the case of teenagers the assumption is a very strong one. In 1978, 42% of those unemployed aged 16 to 19 had never worked before. It is hard to believe they knew the layoff probabilities for all their prospective jobs.

Is it necessary to use an implicit contract-type model to reconcile a minimum wage analysis with high turnover? Not really. All that is needed is a formulation incorporating frequent fluctuations in product demand. Suppose ε_{it} is a shift parameter for the ith firm in period t. The shifts could come either in the product price for a competitive firm or in the position of the demand curve for a monopolistic firm. The value of the marginal product is then $V_i(L_{it}, \varepsilon_{it})$ where L_{it} is employment. Firms equate V_i to the minimum wage $\bar{W}$, giving labor demand $L_{it} = D_i(\bar{W}, \varepsilon_{it})$ at any instant. In a labor market made up of firms like firm i, aggregate employment will decrease with increases in the minimum wage and jobs are generally rationed. But there is quite possibly a great deal of turnover with vacancies opening up frequently and layoffs occurring frequently. It simply depends on the distributions of the ε_i.

Let me now finish with a few comments on the teenage unemployment problem (these comments are not addressed specifically to Hall's chapter).

1. I wonder about the magnitude of the impact of the minimum wage. When aggregate unemployment raises, the rate of wage inflation diminishes little and slowly. When the supply of teenage labor increases, would we expect the teenage relative wage to move quickly to a new equilibrium. Even in an unregulated market I would expect to see persistent high levels of unemployment as a result of the baby boom and the increase in labor-force participation.

Richard Freeman has been studying union wage behavior recently and he has observed that entry level wages are raised relative to the wages of senior workers. The legal minimum wage of \$3.35 per hour hardly matters when the union entry wage is \$5.00 per hour. Of course, unionized workers are in the minority, but unions are very influential in many of the industries and occupations that would be the best bet for young persons currently out of work.

Few if any of the existing studies of the impact of the minimum wage test alternative explanations of the persistent high level of teenage unemployment. If the minimum wage is the only possible explanation, presumably there is no need for econometrics. A high union entry wage gives an alternative. A model incorporating slow relative wage adjustment following shifts in supply or demand would be another.

2. Our inability to agree on the nature of youth unemployment suggest that there is no simple, single scenario that does justice to reality. Some teenagers are prevented from getting jobs by the minimum wage, some are prevented by other sources of wage stickiness and some could get jobs but aspire to become highly paid basketball players and will not accept them. Teenage unemployment probably has both voluntary and involuntary aspects to it.

3. It is legitimate to view joblessness among students somewhat differently from other unemployment. But simply to add employed youths to in-school youths to give a figure for those "productivly occupied" gives too rosy a picture. There is a crisis in our schools comparable to the problems in the labor market. Absenteeism and absence of real learning are common. There is a social problem afflicting a significant minority of our young people encompassing joblessness, crime, unwanted pregnancy, partial illiteracy, and lack of technical skills.

4. Migration has been a major factor in the labor market difficulties of young people, especially of blacks. In the early 1950s a much larger fraction of young blacks lived in rural areas than today. The decline of employment in agriculture has thrown a heavy burden of adjustment onto the low-skill urban labor market. New waves of low-skill immigrants and their children are perpetuating the problem.

5. The degree of inequality of opportunity between a suburban middle-class teenager and a lower-class ghetto youth is deeply disturbing. We must try to clarify the causes of the problem and do something about them, for we should not let the situation persist for generation after generation.

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